Journal of

Microscopy

P. Echlin, C. B. Carter, A. Entwistle,
K. M. Knowles, T. Mattfeldt,
J. B. Pawley, D. B. Williams, T. Wilson

Volume 175 1994

© 1994 The Royal Microscopical Society

Authorization to photocopy items for internal or personal use, or the internal or personal use of specific clients, is granted by The Royal Microscopical Society for libraries and other users registered with the Copyright Clearance Center (CCC), Transactional Reporting Service, provided that the stated fee of $10.50 per copy is paid directly to the CCC, 222 Rosewood Drive, Suite 910, Danvers, MA 01923, U.S.A. Special requests should be addressed to the Editor. *Journal of Microscopy* 0022-2720/94 $10.50.

Published by Blackwell Scientific Publications Ltd
Osney Mead, Oxford OX2 0EL, U.K.
25 John St., London WC1N 2BL, U.K.
23 Ainslie Place, Edinburgh EH3 6AJ, U.K.
Suite 500, 5th Floor, 238 Main St., Boston, MA 02142, U.S.A.
54 University St., Carlton, Victoria 3053, Australia
Librairie Arnette SA, 2 rue Casimir-Delavigne, 75006 Paris, France
Blackwell Wissenschaft-Verlag, Dusseldorfer Strasse 38, D-10707, Berlin, Germany
Blackwell MZV, Feldgasse 13, A-1238 Vienna, Austria

ISSN 0022-2720

Printed in Great Britain by the Alden Press, Oxford

Blackwell Scientific Publications
OXFORD LONDON EDINBURGH BOSTON

Contents

Part 1 July 1994

T. WILSON, R. JUSKAITIS AND J. B. TAN. Differential imaging in confocal microscopy, 1

W. TICHELAAR, C. FERGUSON, J.-C. OLIVO, K. R. LEONARD AND M. HAIDER. A novel method of Z-contrast imaging in STEM applied to double-labelling, 10

A. F. W. VAN DER STEEN, J. M. THIJSSEN, J. A. W. M. VAN DER LAAK, G. P. J. EBBEN AND P. C. M. DE WILDE. A new method to correlate acoustic spectroscopic microscopy (30 MHz) and light microscopy, 21

H. HOHENBERG, K. MANNWEILER AND M. MÜLLER. High-pressure freezing of cell suspensions in cellulose capillary tubes, 34

R. LEVI-SETTI, J. M. CHABALA AND S. SMOLIK. Nucleotide and protein distribution in BrdU-labelled polytene chromosomes revealed by ion probe mass spectrometry, 44

J. WIERZCHOS AND C. ASCASO. Application of back-scattered electron imaging to the study of the lichen–rock interface, 54

E. H. OLDMIXON, J. P. BUTLER AND F. G. HOPPIN. Semi-automated measurement of true chord length distributions and moments by video microscopy and image analysis, 60

G. J. LAROYE AND K. GRANT. A simple algorithm to measure the volume-weighted and number-weighted mean volume of particles, 70

Short Technical Note

A. SEIYAMA, S.-S. CHEN, H. KOSAKA AND T. SHIGA. Microspectroscopic measurement of the optical properties of rat liver in the visible region, 84

Letter to the Editor, 90

Book review, 91

Part 2 August 1994

S. VAEZY AND J. I. CLARK. Quantitative analysis of the microstructure of the human cornea and sclera using 2-D Fourier methods, 93

Z. TANG, R. HO, Z. XU, Z. SHAO AND A. P. SOMLYO. A high-sensitivity CCD system for parallel energy-loss spectroscopy (CCD for EELS), 100

H. SCHNEIDER, M. FALLERT AND E. D. WACHSMUTH. Kinetics of intracellular Ca^{2+} concentration changes and cell contraction of electrically stimulated cardiomyocytes as analysed by automated digital-imaging microscopy, 108

F. BRETSCHNEIDER AND P. F. M. TEUNIS. Reduced-carrier single-sideband microscopy: a powerful method for the observation of transparent microscopical objects, 121

M. CYRKLAFF, N. ROOS, H. GROSS AND J. DUBOCHET. Particle–surface interaction in thin vitrified films for cryo-electron microscopy, 135

A. WARLEY, K. P. B. CRACKNELL, H. B. CAMMISH, C. H. C. TWORT, J. P. T. WARD AND S. J. HIRST. Preparation of cultured airway smooth muscle for the study of intracellular element concentrations by X-ray microanalysis: comparison of whole cells with cryosections, 143

G. J. BRAKENHOFF, K. VISSCHER AND E. J. GIJSBERS. Fluorescence bleach rate imaging, 154

E. J. GIJSBERS, G. J. BRAKENHOFF AND T. D. VISSER. Fluorescence saturation in confocal microscopy, 162

Short Technical Notes

A. M. PAGE, J. R. LAGNADO, T. W. FORD AND G. PLACE. Calcium alginate encapsulation of small specimens for transmission electron microscopy, 166

A. N. BARNAKOV. Sequential treatment by phosphotungstic acid and uranyl acetate enhances the adherence of lipid membranes and membrane proteins to hydrophobic EM grids, 171

Part 3 September 1994

Editorial, 175

U. HAHN AND U. LORZ. Stereological analysis of the spatial Poisson–Voronoi tessellation, 176

L. M. KARLSSON AND A. LILJEBORG. Second-order stereology for pores in translucent alumina studied by confocal scanning laser microscopy, 186

J. M. MISSIAEN AND J. M. CHAIX. The homogeneity of phase repartition in TiB_2–Fe composites using variance and covariance analysis, 195

K. SANDAU AND H. KURZ. Modelling of vascular growth processes: a stochastic biophysical approach to embryonic angiogenesis, 205

E. PIRARD. Shape processing and analysis using the calypter, 214

Z. DONG, M. E. MCCULLY AND M. J. CANNY. Retention of vacuole contents of plant cells during fixation, 222

P. CASTANO, A. MARCUCCI, A. MIANI JR, M. MORINI, S. VERALDI AND C. RUMIO. Central and periphral structures as seen at the confocal scanning laser microscope, 229

A. ENTWISTLE AND M. NOBLE. Optimizing the performance of confocal point scanning laser microscopes over the full field of view, 238

M.-H. YAO AND D. J. SMITH. HREM image simulations for small particle catalysts on crystalline supports, 252

Book reviews, 266

Author index, 269

Key-word index, 270